

IN THE CLAIM

1 1. (Currently Amended) A method for managing a memory system having a plurality of
2 subsystems, comprising the steps of:

3 upon accessing the subsystems for a piece of data used by a first process,
4 determining ~~the an~~ access time to acquire the piece of data in the
5 memory system;
6 comparing the determined access time to a threshold; and
7 taking an action based on ~~the~~ results of the comparing step;

8 wherein

9 ~~accessing the subsystems is in a non-sequential order~~
10 a value of the threshold is selected based on whether the value is a
11 realistic time for a memory access;
12 a memory table includes entries pointing to data blocks storing data
13 for at least one subsystem;
14 the entries are used to locate the data stored in the data blocks; and
15 while the first process is being executed, the memory table working
16 with a memory manager managing the data blocks
17 independent of an operating system working with the
18 memory system and independent of a processor working
19 with the memory system.

1 2. (Currently Amended) The method of claim 1 wherein a data block[s] containing the
2 piece of data is placed in the memory system based on information selected in one
3 or a combination of:
4 a movement pattern of data in [a] the data block,

5 a structure of the memory system, and
6 a cache-level architecture in the memory system.

1 3. (Canceled)

1 4. (Canceled)

1 5. (Currently Amended) The method of claim 1 further comprising the steps of:
2 using a memory table having entries pointing to data blocks storing data
3 for the memory system; and
4 the memory table using a physical address of a memory page
5 corresponding to the piece of ~~access~~ data to convert to a location
6 address corresponding to an entry pointing to the location of the
7 piece of ~~access~~ data.

1 6. (Currently Amended) A method for managing a memory system, comprising the steps
2 of:
3 upon accessing the memory system for a piece of data used by a first
4 process,
5 a processor working with the memory system continuing its
6 functions until it is stalled;
7 comparing ~~the a~~ time taken to complete the memory access to a
8 threshold; and
9 if the time taken to complete the memory access is close to, equal
10 to, or greater than the threshold, then taking an action based
11 on results of the comparing step; a value of the threshold

1 7. (Original) The method of claim 6 wherein the action is selected in one or a combination
2 of
3 postponing executing the first process and allowing executing a second
4 process;
5 causing the first process to be switched to a second process; and
6 causing a performance monitor on the memory system or on a system
7 using the memory subsystem.

1 8. (Original) The method of claim 6 further comprising the step of polling a latency
2 manager for the time taken to complete the memory access; the latency manager
3 being part of managing the memory system.

1 9. (Currently Amended) The method of claim 6 further comprising the steps of:

2 · using a memory table having entries pointing to data blocks storing data;

3 · for at least one subsystem; and

4 · using the entries to locate the ~~access~~ data stored in the data blocks.

1 10. (Currently Amended) The method of claim 9 wherein, while the first process is being
2 executed, the memory table working with a memory manager managing the data
3 blocks independent of a processor working with the memory system and
4 independent of an operating system working with the memory system.

1 11. (Currently Amended) A method for managing a memory system, comprising the
2 steps of:

3 upon accessing the memory system for a piece of data used by a first
4 process
5 counting a time elapsed from the time the data access starts; the
6 counted time being increased as the data is being accessed;
7 comparing the counted time to a threshold; a value of the threshold
8 is selected based on whether the value is a realistic time for
9 a memory access; and
10 ~~if the counted time is close to, equal to, or greater than the~~
11 ~~threshold, then based on results of the comparing step, taking an~~
12 action selected in one or a combination of
13 postponing executing the first process and allowing
14 executing a second process;
15 causing the first process to be switched to a second process;
16 and
17 causing a performance monitor on the memory system or on
18 a system using the memory system.

1 12. (Original) The method of claim 11 further comprising the steps of:
2 using a memory table having entries pointing to data blocks storing data
3 for at least one memory subsystem; and
4 using the entries to locate the access data stored in the data blocks.

1 13. (Currently Amended) A computer-readable medium embodying instructions for a
2 computer to perform a method for managing a memory system having a plurality
3 of subsystems, the method comprising the steps of:

4 upon accessing the subsystems for a piece of data used by a first process,

5 determining ~~the an~~ access time to acquire the piece of data in the
6 memory system;

7 comparing the determined access time to a threshold; and

8 taking an action based on ~~the~~ results of the comparing step;

9 wherein

10 ~~accessing the subsystems is in a non-sequential order~~

11 a value of the threshold is selected based on whether the value is a
12 realistic time for a memory access;

13 a memory table includes entries pointing to data blocks storing data
14 for at least one subsystem;

15 the entries are used to locate the data stored in the data blocks; and

16 while the first process is being executed, the memory table working

17 with a memory manager managing the data blocks

18 independent of an operating system working with the

19 memory system and independent of a processor working

20 with the memory system.

1 14. (Currently Amended) The computer-readable medium of claim 13 wherein a data

2 block[s] containing the piece of data is placed in the memory system based on

3 information selected in one or a combination of:

4 a movement pattern of data in [a] the data block,

5 a structure of the memory system, and

6 a cache-level architecture in the memory system.

1 15. (Canceled)

1 16. (Canceled)

1 17. (Currently Amended) The computer-readable medium of claim 13 wherein the method
2 further comprises the steps of:

3 ~~using a memory table having entries pointing to data blocks storing data~~
4 ~~for the memory system; and~~

5 the memory table using a physical address of a memory page
6 corresponding to the piece of ~~aceess~~ data to convert to a location
7 address corresponding to an entry pointing to the location of the
8 piece of ~~aceess~~ data.

1 18. (Currently Amended) A computer-readable medium embodying instructions for a
2 computer to perform a method for managing a memory system, the method
3 comprising the steps of:

4 upon accessing the memory system for a piece of data used by a first
5 process,

6 a processor working with the memory system continuing its
7 functions until it is stalled;

8 comparing ~~the a~~ time taken to complete the memory access to a
9 threshold; a value of the threshold being selected based on
10 whether the value is a realistic time for a memory access;
11 and

12 if the time taken to complete the memory access is close to, equal
13 to, or greater than the threshold, then based on results of the
14 comparing step, taking an action.

1 19. (Original) The computer-readable medium of claim 18 wherein the method further
2 comprises the step of polling a latency manager for the time taken to complete the
3 memory access; the latency manager being part of managing the memory system.

1 20. (Currently Amended) The computer-readable medium of claim 18 wherein the method
2 further comprises the steps of:
3 using a memory table having entries pointing to data blocks storing data
4 for at least one subsystem; and
5 using the entries to locate the ~~access~~ data stored in the data blocks.

1 21. (Currently Amended) A computer-readable medium embodying instructions for a
2 computer to perform a method for managing a memory system, the method
3 comprising the steps of:
4 upon accessing the memory system for a piece of data used by a first
5 process,
6 counting a time elapsed from the time the data access starts; the
7 counted time being increased as the data is being accessed;
8 comparing the counted time to a threshold, a value of the threshold
9 being selected based on whether the value is a realistic time
10 for a memory access; and

11 if the counted time is close to, equal to, or greater than the
12 ~~threshold, then based on results of the comparing step, taking an~~
13 action selected in one or a combination of
14 postponing executing the first process and allowing
15 executing a second process;
16 causing the first process to be switched to a second process;
17 and
18 causing a performance monitor on the memory system or on
19 a system using the memory subsystem.

1 22. (Currently Amended) The computer-readable medium of claim 21 wherein the method
2 further comprises the steps of:
3 using a memory table having entries pointing to data blocks storing data
4 for at least one memory subsystem; and
5 using the entries to locate the ~~access~~ data stored in the data blocks.

1 23. (Currently Amended) An apparatus for managing a memory system having a plurality
2 of subsystems, comprising:
3 means for, upon accessing the subsystems for a piece of data used by a first
4 process,
5 determining ~~the~~ an access time to acquire the piece of data in the
6 memory system;
7 comparing the determined access time to a threshold; and
8 taking an action based on ~~the~~ results of the comparing step;
9 wherein
10 ~~accessing the subsystems is in a non-sequential order~~

11 a value of the threshold is selected based on whether the value is a
12 realistic time for a memory access;
13 a memory table includes entries pointing to data blocks storing data
14 for at least one subsystem;
15 the entries are used to locate the data stored in the data blocks; and
16 while the first process is being executed, the memory table working
17 with a memory manager managing the data blocks
18 independent of an operating system working with the
19 memory system and independent of a processor working
20 with the memory system.

1 24. (Currently Amended) The apparatus of claim 23 wherein a data block[s] containing
2 the piece of data is placed in the memory system based on information selected in
3 one or a combination of:
4 a movement pattern of data in [a] the data block,
5 a structure of the memory system, and
6 a cache-level architecture in the memory system.

1 25. (Canceled)

1 26. (Canceled)

1 27. (Currently Amended) The apparatus of claim 23 ~~further comprising a memory table~~
2 having entries pointing to data blocks storing data for the memory system; wherein
3 the memory table using a physical address of a memory page corresponding to the

4 piece of access data to convert to a location address corresponding to an entry
5 pointing to the location of the piece of access data.

1 28. (Currently Amended) An apparatus for managing a memory system, comprising:
2 upon accessing the memory system for a piece of data used by a first
3 process,
4 a processor for working with the memory system and for
5 continuing its functions until it is stalled;
6 means for comparing the time taken to complete the memory
7 access to a threshold; a value of the threshold being selected
8 based on whether the value is a realistic time for a memory
9 access; and
10 means for taking an action ~~if the time taken to complete the~~
11 ~~memory access is close to, equal to, or greater than the~~
12 ~~threshold based on results of comparing.~~

1 29. (Original) The apparatus of claim 28 further comprising means for polling a latency
2 manager for the time taken to complete the memory access; the latency manager
3 being part of managing the memory system.

1 30. (Currently Amended) The apparatus of claim 28 further comprising a memory table
2 having entries pointing to data blocks storing data for at least one subsystem; the
3 entries being used to locate the access data stored in the data blocks.

1 31. (Currently Amended) An apparatus for managing a memory system, comprising:

1 32. (Currently Amended) The apparatus of claim 31 further comprising a memory table
2 having entries pointing to data blocks storing data for at least one memory
3 subsystem; the entries being used to locate the access data stored in the data
4 blocks.

1 33. (New) The method of claim 5 wherein the physical address of the memory page is
2 converted from a virtual address of the piece of data.

1 34. (New) The computer-readable medium of claim 17 wherein the physical address of
2 the memory page is converted from a virtual address of the piece of data.

1 35. (New) The apparatus of claim 27 wherein the physical address of the memory page is
2 converted from a virtual address of the piece of data.